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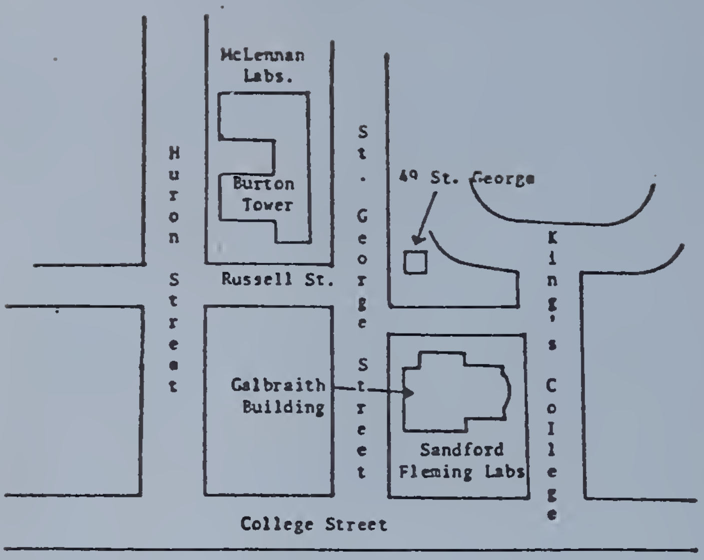
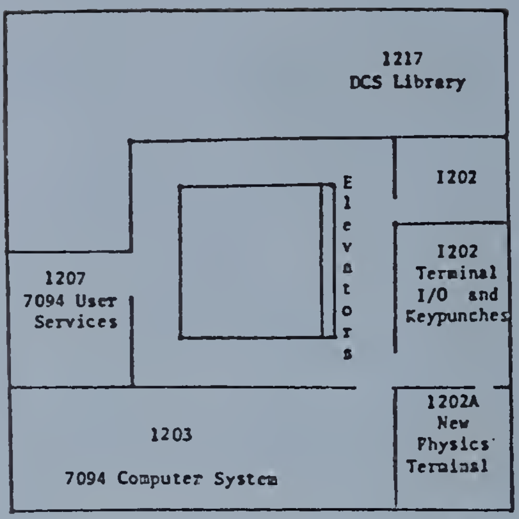
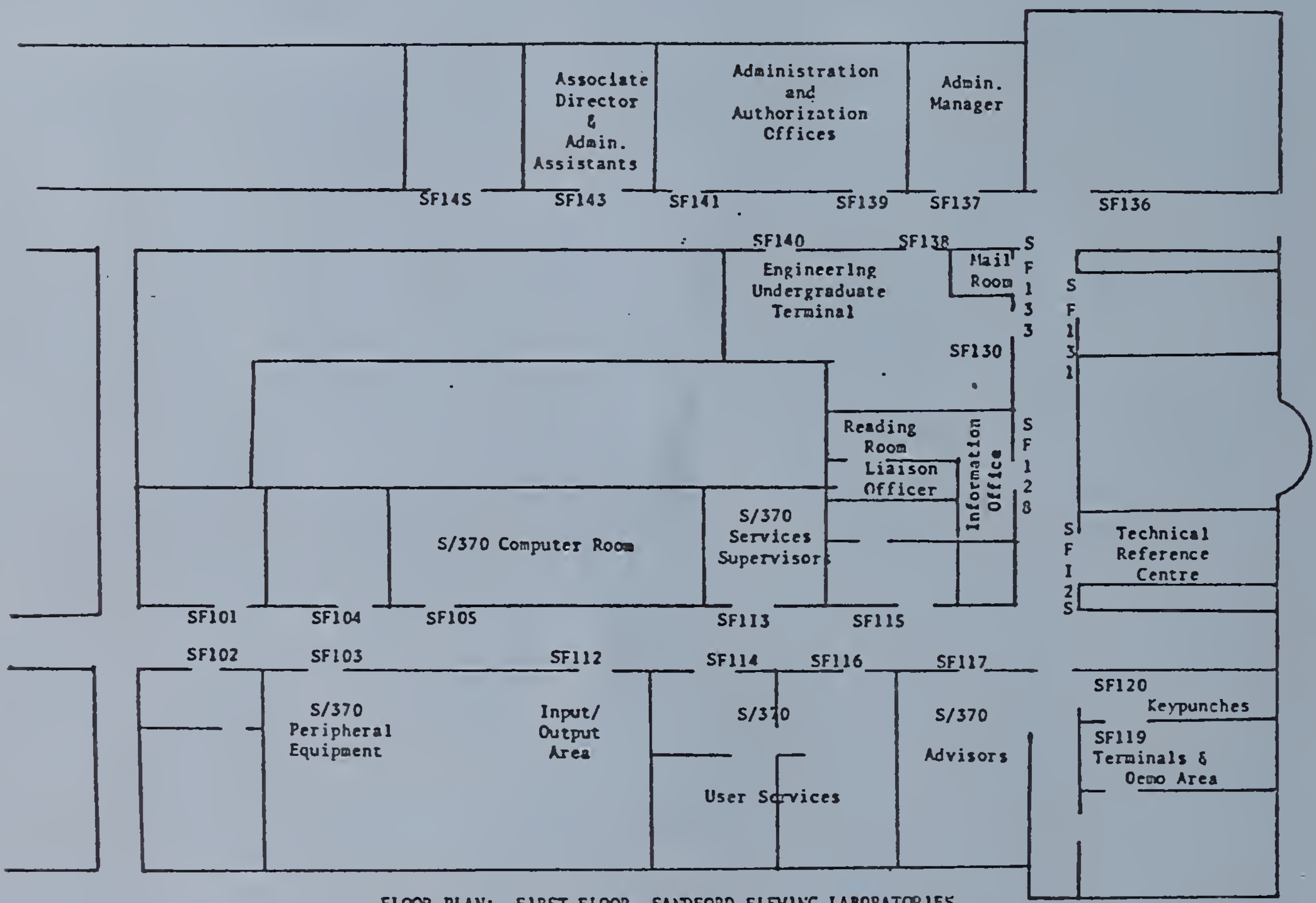


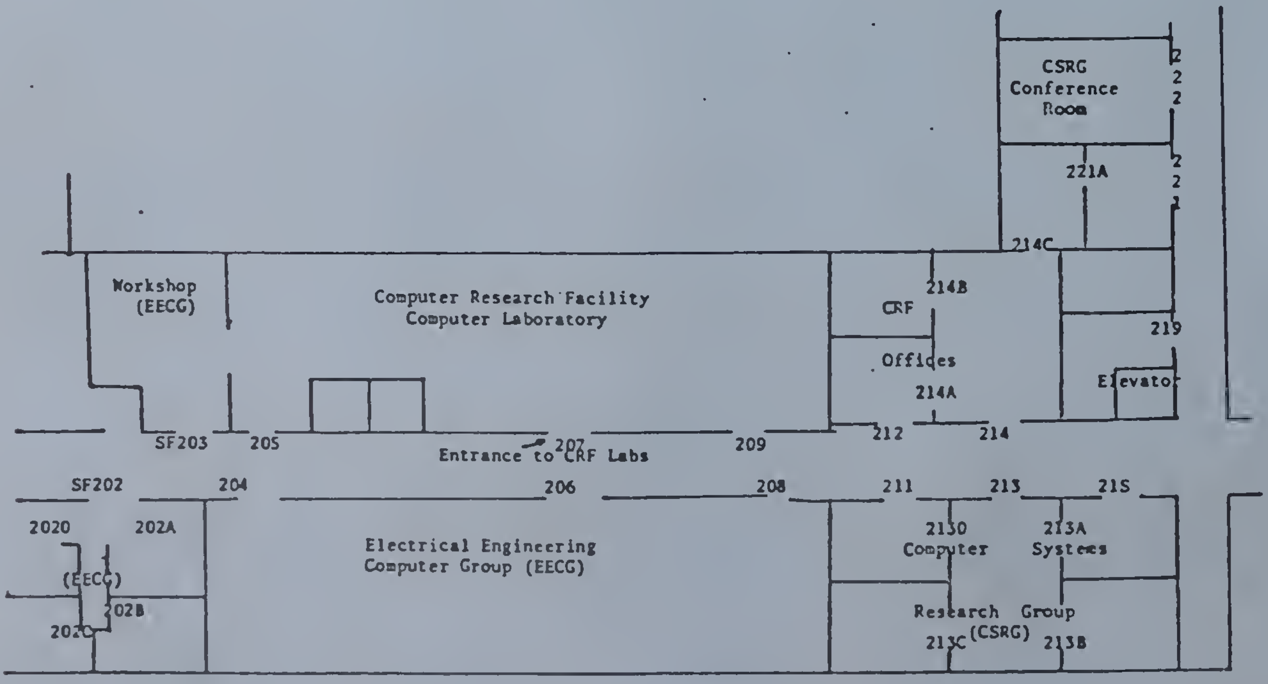


FLOOR PLAN: TWELFTH FLOOR, BURTON TOWER

UNIVERSITY OF TORONTO COMPUTER CENTRE



FLOOR PLAN: FIRST FLOOR, SANDFORD FLEMING LABORATORIES



FLOOR PLAN: SECOND FLOOR, SANDFORD FLEMING LABORATORIES

MANAGER OF COMPUTER RESEARCH FACILITY

J. C. Wilson

It is with regret that I announce the resignation of Jim McBride as Manager of the UTCC Computer Research Facility.

Manager of CRF since its creation at the time of his arrival at the U of T nearly seven years ago, Jim has seen it through the first cycle of its existence.

Jim is moving to the Mini-Computer Division of Bell Northern Research in Bramalea at the end of November. We wish him all the very best for the future.

COMPUTER ASSISTED LEARNING AT THE UNIVERSITY OF TORONTO

F. Clancy

The Erindale College CAL Group has released a new version of APLCAT, a lesson authoring language written in APL, as well as a lesson management workspace, which allows students to search an index of lessons, and to start or restart lessons. The lessons included on the system include the work of the Physics Department, J. C. Hurd at Trinity College, J. M. Deckers of Erindale College and all of the material developed for Erindale College.

The Plato terminal at UTCC remains active as a demonstration terminal, with active graphics programming planned by UTCC personnel. The Plato system as a whole is becoming very reliable and much more user oriented. We should have a demonstration slide which allows rear projection through the plasma display screen in the very near future.

For information on these and other projects please contact Ford Clancy, 928-6021 (UTCC) or 828-5309 (Erindale College).

PERSONNEL CHANGES

P. Kellett

Apologies to Bruce Frost. His surname was misspelled in our article last month. Should we blame it on the computer?

We bid "adieu" to Bob Cavanagh, Denise Jackson, John Matuszek and Patrick Rosar. Adieu is very appropriate as Bell Canada Data Centre in Dorval is gaining the very capable skills of Bob. We wish you all the best in your new endeavours.

Trudy Holland reports that within CRF this month Bernard Leger, recently appointed Head of Operations, decided to leave CRF and return to industry. He will be Head of Operations for Hawker Siddeley Canada Ltd. in Thunder Bay. Best of Luck!

John Morton, who has worked at CRF as a computer operator for the past year, has been appointed Operations Supervisor to replace Bernie. Congratulations!

SCIENTIFIC AND TECHNICAL DATA BASES

W. E. Greene

The National Research Council is gathering information pertaining to existing services and data bases prior to the development of a National Scientific and Technical Information System.

It would be greatly appreciated if any of our faculty or staff who feel they offer services or can share data bases with others in the scientific community would contact the Liaison Office, SF128 (or call 928-2694).

RECENT ACQUISITIONS IN DCS LIBRARY

Abrams, M.D. and Stein, P.G.
Computer Hardware and Software: An Interdisciplinary Introduction.
Reading, Mass., Addison-Wesley, 1973.

Abramson, H.
Theory and Application of a Bottom-Up Syntax-Directed translator.
New York, Academic Press, 1973.

Aho, Alfred V. and Ullman, J.D.
The Theory of Parsing, Translation, and Compiling.
Englewood Cliffs, N.J., Prentice-Hall, 1972-73. V.2

Andree, R.V., Andree, J.P. and Andree, D.D.
Computer Programming: Techniques, Analysis, and Mathematics.
Englewood Cliffs, N.J., Prentice-Hall, 1973.

Aronofsky, J.S., ed.
Progress in Operations Research, V.3: Relationship between Operations Research and the Computer.
New York, Wiley, 1969.

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Special Interest Group on Computer Systems Installation Management.
Major Issues Confronting Managers of Computer Resources, Ed. by Lee L. Selwyn.
New York, ACM, 1973.

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Automatic Data Processing: Principles and Procedures.
Englewood Cliffs, N.J., Prentic-Hall, 1973.

Bergman, S. and Bruckner, S.
Introduction to Computers and Computer Programming.
Reading, Mass., Addison-Wesley, 1972.

Bernard, S.M.
System/360 Report Program Generator.
Englewood Cliffs, N.J., Prentice-Hall, 1970.

Carnahan, B. and Wilkes, J.O.
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New York, Wiley, 1973.

Chang, C.-l and Lee T.C-t.
Symbolic Logic and Mechanical Theorem Proving.
New York, Academic Press, 1973.

Conway, R.W. and Gries, D.
An Introduction to Programming; A Structured Approach Using PL/1 and PL/C.
Cambridge, Mass., Winthrop Publishers, 1973.

Forsythe, A.I., Organick, E.I. and Plummer, R.P.
Computer Science: Projects and Study Problems.

Goldberg, W. et al, eds.
Management Information Systems: Selected Papers from MIS Copenhagen 70.
Lund, Studentlitteratur, 1971.

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Graph Theory in Modern Engineering: Computer Aided Design, Control Optimization, Reliability Analysis.
New York, Academic Press, 1973.

IFIP Working Conference on Graphic Languages, Vancouver, May, 1972.
Graphic Languages, ed. by F. Nake and A. Rosenfeld.
Amsterdam, North-Holland, 1972.

Jones, Neil D.
Computability Theory: An Introduction.
New York, Academic Press, 1973.

Kennan, Stella, ed.
Key Papers on the Use of Computer-Based Bibliographic Services.
Washington, D.C., American Society for Information Science, 1973.

Kennedy, M. and Solomon, M.B.
Eight Statement PL/C (PL/ZERO) plus PL/ONE.
Englewood Cliffs, N.J., Prentice-Hall, 1972

Maurer, W.D.
The Programmer's Introduction to LISP.
London, Macdonald, 1972.

Organick, E.I.
Computer System Organization: The B5700/B6700 Series.
New York, Academic Press, 1973.

Pritchard, A.
A Guide to Computer Literature: An Introductory Survey of the Sources of Information. 2d. ed.
Hamden, Conn., Linnet Books, 1972.

Saxon, J.A. and Steyer, W.W. 2d. ed.
Basic Principles of Data Processing.
Englewood Cliffs, N.J., Prentice-Hall, 1970.

Symposium on Sparse Matrices and Their Applications, Yorktown Heights, N.Y., 1971.
Sparse Matrices and Their Applications, ed. by D.J. Rose and R.A. Willoughby.
New York, Plenum Press, 1972.

Tulving, E. and Donaldson, W., eds.
Organization of Memory.
New York, Academic Press, 1972.

Uhr, L.M.
Pattern Recognition, Learning, and Thought: Computer-Programmed Models of Higher Mental Processes.
Englewood Cliffs, N.J., Prentice-Hall, 1973.

Wirth, N.
Systematic Programming: An Introduction.
Englewood Cliffs, N.J., Prentice-Hall, 1973.

UNIVERSITY OF TORONTO COMPUTER CENTRE

University of Toronto

XMAS & NEW YEAR SCHEDULES

	22 Sat.	23 Sun.	24 Mon.	25 Tues	26 Wed.	27 Thur	28 Fri.	29 Sat.	30 Sun.	31 Mon.	1 Tues
LIAISON OFFICE	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
INFORMATION OFFICE	▨	▨	▨	▨	▨	SS	SS	▨	▨	▨	▨
ADMINISTRATION OFFICE	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
ACCOUNTING OFFICE	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
7094	SS	SS	▨	▨	▨	SS	SS	▨	▨	▨	▨
S/360 OFFICES	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
FACILITY	SS	SS	UO	UO	UO	SS	SS	SS	SS	UO	UO
S/370 OFFICES	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
FACILITIES	SS	SS	SS	▨	▨	SS	SS	SS	SS	SS	▨
CRF OFFICE	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨	▨
LABORATORY	▨	▨	SS	▨	▨	SS	SS	▨	▨	SS	▨

▨	closed
UO	unattended operation
SS	single shift 9 a.m.-5 p.m.

S/370 RELIABILITY

R. Cavanagh

Uptime for October was 95.6% which was a considerable improvement over the the disastrous month of September. Unscheduled IPL's dropped to 1.83 per day.

	% Uptime	Unsched IPLs/day
Jan 73	96.8	0.87
Feb 73	98.3	1.18
Mar 73	97.8	1.16
Apr 73	97.1	1.39
May 73	98.5	1.20
Jun 73	98.5	1.70
Jul 73	99.4	0.37
Aug 73	97.6	1.13
Sep 73	86.8	3.63
Oct 73	95.6	1.83

Most of our extended downtimes were caused by hardware. The intermittent Channel 4 problem continued from September until it was resolved October 1. In addition, power sequencing problems prevented the system from coming up on several occasions after a circuit breaker blew.

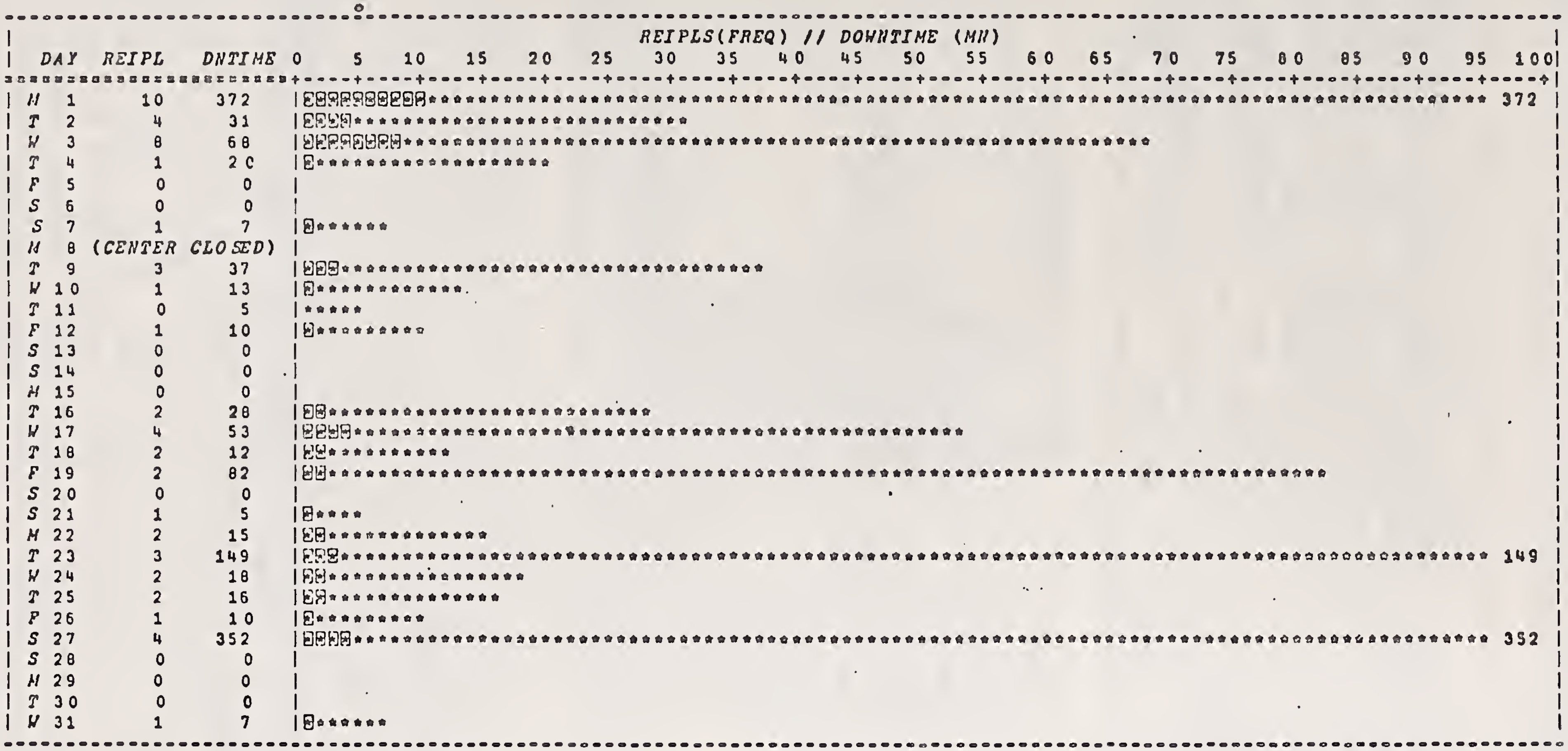
Several severe software problems occurred, during which the system nucleus was overwritten. Additional problems occurred briefly after a new version of HASP was installed.

All hardware and most software problems have now been resolved.

```
                     _S/370__DOWNTIMES_DURING_OCT_73


---------------------------------------------------------------------------------------------------------------------------
|                                                  TIME OF DAY (HOURS)                                                    |
|  DAY   RELOADS DNTIME  0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24|
=========================+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+|
| M  1     10    372     |  H HH  H HHHHHHH H HHHHH      II HHHH H HHHHHHH                                                |
| T  2      4     31     |                    S                  H                                 S          H           |
| W  3      8     68     |                                                                 H  SS SS S S                   |
| T  4      1     20     |                                                                SS                              |
| F  5      0      0     |                                                                                                |
| S  6      0      0     |                                                                                                |
| S  7      1      7     |                                                           H                                    |
| M  8  (CENTER CLOSED)  |                                                                                                |
| T  9      3     37     |I                                                           HH                                  |
| W 10      1     13     |                               I                                           S                    |
| T 11      0      5     |                               I                                                                |
| F 12      1     10     |                                          S                                                     |
| S 13      0      0     |                                                                                                |
| S 14      0      0     |                                                                                                |
| M 15      0      0     |                                                                                                |
| T 16      2     28     |                               I                                H        S                      |
| W 17      4     53     |                               I        S S   S   SS                                            |
| T 18      2     12     |                                      S              S                                          |
| F 19      2     82     |                                          S                                   OOOH UO           |
| S 20      0      0     |                                                                                                |
| S 21      1      5     |                                          S                                                     |
| M 22      2     15     |      S                                                         S                               |
| T 23      3    149     |                                         S                    S         S       H HHHHHHH       |
| W 24      2     18     |       H                                                               S                        |
| T 25      2     16     |                                                       S        S                               |
| F 26      1     10     |                               I              S                                                 |
| S 27      4    352     |                                                   H HHHHHHHHHHHHHS      H HHHHHHHHH            |
| S 28      0      0     |                                                                                                |
| M 29      0      0     |                                                                                                |
| T 30      0      0     |                                                                                                |
| W 31      1      7     |                                                   S                                            |
---------------------------------------------------------------------------------------------------------------------------
LEGEND :    H FOR HARDWARE
            S FOR SOFTWARE                STATISTICS
            O FOR OPERATIONAL
            U FOR UNEXPLAINED
            I FOR LATE IPL
                                        TOTAL SCHEDULED HOURS OF PRODUCTION :  499
                                        TOTAL DOWNTIME (MN)   : 1310 , AVG/DAY :  43.67 , AVG/PROD HOUR :   1.31
                                        TOTAL REIPL'S         :   55 , AVG/DAY :   1.83
                                        DOWNTIME RATE IS      :  4.37 PERCENT OF SCHEDULED PRODUCTION HOURS
```

DOWNTIME_REPORT_ON___S/370__FOR_OCT_73



DAY		REIPL	DNTIME
M	1	10	372
T	2	4	31
W	3	8	68
T	4	1	2C
F	5	0	0
S	6	0	0
S	7	1	7
M	8	(CENTER CLOSED)	
T	9	3	37
W	10	1	13
T	11	0	5
F	12	1	10
S	13	0	0
S	14	0	0
M	15	0	0
T	16	2	28
W	17	4	53
T	18	2	12
F	19	2	82
S	20	0	0
S	21	1	5
M	22	2	15
T	23	3	149
W	24	2	18
T	25	2	16
F	26	1	10
S	27	4	352
S	28	0	0
M	29	0	0
T	30	0	0
W	31	1	7

LEGEND : ONE ☐ =ONE REIPL
ONE * =ONE MINUTE OF DOWNTIME

CHRISTMAS/NEW YEARS OPERATIONS SCHEDULE

R. Cox

The following chart summarizes the hours of service which will be in effect for System/370 Services users during the Christmas/New Year Holiday period. Note that these hours apply to I/O Services (SF112), CRJE and TSO Services, EUT, ASUT, and AST only. Users of the other terminals should refer to the articles Christmas Hours at Erindale and Christmas Hours at Scarborough appearing elsewhere in this issue of the Newsletter, or check the bulletin boards at the various remote sites. There will be Tape/Disk Librarian Services available during this period. However, the keypunching department will be closed.

Day	Date	Hours of Operation
Saturday	Dec. 22	0900-1700
Sunday	Dec. 23	0900-1700
Monday	Dec. 24	0900-1700
Tuesday	Dec. 25	CLOSED-CHRISTMAS DAY
Wednesday	Dec. 26	CLOSED-BOXING DAY
Thursday	Dec. 27	0900-1700
Friday	Dec. 28	0900-1700
Saturday	Dec. 29	0900-1700
Sunday	Dec. 30	0900-1700
Monday	Dec. 31	0900-1700
Tuesday	Jan. 1	CLOSED-NEW YEARS DAY

Normal hours of operation will resume Wednesday, January 2, 1974.

Holiday Advising Service

High Speed Job Stream

There will be no advisor on duty at ASUT and EUT from Monday, December 10, 1973 to Sunday, January 6, 1974. Normal HSJS advising service will resume Monday, January 7, 1974.

General Purpose Job Stream

There will be no advisor on duty in SF117 from Saturday, December 22, 1973 to Tuesday, January 1, 1974. Normal GPJS advising service will resume Wednesday, January 2, 1974.

During the holiday period users should direct system status inquiries , etc., to 928-7373.

TSO TIMESHARING

I. Darwin

On Monday, November 5, 1973, S/370 Services implemented full function timesharing under TSO on the S/370-165. The PL/1 Checkout and Optimizing Compilers, FORTRAN-G1 and FORTRAN Interactive Debug are the additional processors now available. By using the HELP command for the topics PLI(Optimizing Compiler) and FORT(Fortran-G1) the user may obtain sufficient documentation to run PL/1 Optimizer and FORTRAN-G1. In addition to the information provided by entering HELP for the commands PLIC(PL/1 Checkout) and TESTFORT(Fortran interactive debug), full documentation can be found in the publications listed below, which are available at the Information Office:
TSO Command Language Reference GC28-6732-4
PL/1 Checkout Compiler TSO Users' Guide SC33-0033-2
FORTRAN Interactive Debug for OS(TSO) SC28-6885-1

TSO sessions are now charged on the basis of resource usage. The LOGOFF command now gives a message to the user which includes accounting information. Included in the accounting information are the dollar costs of the session, the four numeric digits of the authorization code against which the session is charged, the session length in hours, minutes and seconds, the CPU time in minutes, the I/O time in minutes, the amount of main storage in kilobytes and the memory usage figure in kilobyte minutes.

The I/O time figure is based on a calculation which multiplies the number of EXCP's (I/O requests, exclusive of terminal and swap requests) by .0203 seconds per EXCP. Currently, there is no charge for connect time. Two components make up the dollar charge: a CPU time charge of $8.50 per minute and the main storage charge which is slightly higher than it is for batch jobs ($1.55 compared with $1.05) to compensate for the added resource requirements of TSO. Memory usage is calculated in the same manner for a TSO session as it is for a batch job.

PL360 AVAILABLE ON GPJS

M. Tapia

PL360 is now available on the General Purpose Job Stream. PL360 is a programming language designed specifically for the IBM System/360 computers. It was developed at Stanford University to provide the facilities of a symbolic machine language with a structure similar to ALGOL. It is an efficient one pass, "in core" compiler, designed with the following aims:

1. To allow full use of the facilities provided by 360 hardware.

2. To provide convenience in writing and correcting programs.

3. To encourage the user to write in a clear, comprehensible style.

PL360 can be accessed on the GPJS using the following UTCC catalogued procedures:

PL36
PL36LE
PL36GO
PL36LEGO

PL360 was used to write the ALGOLW and PL360 compilers and has been used by S/370 Services for the coding of the High Speed Job Stream processor, UTILITY. Documentation on PL360 can be obtained from the Information Office in Sandford Fleming Room 128.

An example of a sample program to list a card deck follows:

```
//   EXEC   PL36GO
//PL36.SYSIN DD *
  BEGIN
   COMMENT READ FROM SYSIN WRITE ON SYSPRINT;
   ARRAY 132 BYTE CARD = (132 (" "));
   R0 := @CARD;
   COMMENT R0 CONTAINS THE ADDRESS OF CARD;
   READ;
   WHILE < = DO
    BEGIN
      WRITE;
      READ;
    END;
   END.
//GO.SYSIN DD *
     .
     .    cards to be read
     .
```

ATTENTION TAPE USERS

S. May

Anyone using magnetic tape as a storage medium should be aware of the following facts:

1) A tape should acclimatize in the tape library for at least 8 hours before being mounted on a tape drive. This is especially important if the tape has been exposed to extreme heat or cold for an extended period of time.

2) Tapes expand and contract as a result of atmospheric changes (temperature, humidity, etc.). The tension of the tape shifts and consequently the tape 'buckles' approximately 1/4" in from the outside edge.

3) Tapes stored and unused for an extended period of time become damaged, resulting in the subsequent loss of data.

Tape users who plan to store data on their tapes for a period of one year or more have the following two alternatives open to them:

a) Submit a job periodically to read the data. This unwinds the tape and re-distributes the tension.

b) Store the data on one of the newly developed tapes currently being manufactured. These new tapes are guaranteed for 5 years and will not expand or contract as a result of atmospheric changes.

With the arrival of new, more sophisticated tape drives, old tapes are no longer as efficient. Users would be well advised to replace their old tapes or have them cleaned and tested before costly problems and delays occur.

Any questions regarding data storage can be answered by the Tape/Disk Librarian, Room 106, Sandford Fleming, or phone 928-7319.

CALCOMP PLOTTER BUG

R.N.M. Radcliffe

CalComp plotter users should be aware that the actual plotting width allowed for plotting is less than the full 11 inches on the small drum and less than 30 inches on the large drum. The maximum widths allowed are 10.75 inches and 29.25 inches respectively. Most users will not be affected as they do not attempt to use the full width of the drum. The problem usually occurs when plotting a vertical axis. The axis may have been designed to allow space for the axis and a notation at the top of the axis within the 11 inch limit. As the full 11 inches is not currently usable, the notation will fall outside the plotter limits. If the physical boundary of the plotter is ever reached, the remaining part of the plot becomes inaccurate and displays the 'loss of origin' problem.

To circumvent this problem, programs generating plots using the full plotter widths should include the following statements after the CALL PLOTST statement until a suitable hardware or software solution is announced:

```
CALL PLTPAG(width)
CALL PLTCHK('CHEK','PRNT')
```

where width should be set to:
29.1 for the 30" plotter
10.6 for the 11" plotter

SPSS RELEASE 5.0

L. Prepas

A new version of SPSS, Version 5.0, is up and currently being tested. Among the new features added are:

(1) ONEWAY - a new one-way analysis of variance procedure which yields a standard one-way analysis of the variance table and, optionally, a breakdown of the degrees of freedom of the between groups sums of squares.

(2) AGGREGATE - generates group statistics for specified variables and unites them on a BCD file. The variables so generated may later be added to an SPSS system file through an ADD VARIABLES card.

(3) FASTBREAK - a faster BREAKDOWN procedure.

In addition, several new commands are available (e.g. REORDER VARS, SORT CASES, EDIT, PAGESIZE, NEW SUBFILES). A more detailed description of these commands is available in the July 1973 update to the SPSS manual.

Finally, several system improvements have been made and many bugs found in Version 4.0 have been corrected.

During the test period, both versions of SPSS (Versions 4 and 5) will be available, Their various features and bugs are advertised in the usual fashion through the SPSSNEWS feature of SPSS. Users wishing to use SPSS Version 5.0 should watch SPSSNEWS for details on how to access that version, or contact Len Prepas at 928-8701.

1971 CENSUS SHORT FORM AGGREGATE DATA TAPES

L. Prepas

A Census Tape informational meeting was held on October 18th, 1973 and various aspects of the use of the tapes were discussed. Topics of discussion included conversion of the tapes to a FORTRAN compatible form, software available for use with the tapes, possible acquisition of 1971 long form data tapes (not currently available) and projected usage of the tapes.

Those attending the meeting recommended that UTCC undertake to convert the tapes to a form usable with standard statistical software (namely, SPSS, Datatext, BMD, etc.). Currently, work is in progress to implement this suggestion. In addition, two access packages, Casper and Statape, are on order from Statistics Canada in Ottawa. These packages can be used to obtain tables from the packed decimal tapes.

Documentation describing the individual tables available on each tape was distributed to participants at the meeting and mailed to those who expressed an interest in using the tapes. Further documentation will be made available for use with the converted 1971 Short Form Data Tapes. Such documentation (in addition to any other already available) will be obtainable from the various terminal co-ordinators at Scarborough, Erindale, AST, and from the advisors in SF 117. A future Newsletter article will outline procedures for accessing the converted tapes.

HSJS STATISTICS

M. Tapia

During the month of October 1973, High Speed Job Stream usage reached an all time high of 205,914 jobs, surpassing the previous high of 158,437 jobs for March 1973 and exceeding the total HSJS jobs for October 1972 by 71,048 jobs. This represents a growth rate of 52%.

During October 1973, the advisors at ASUT and EUT handled 6,866 requests for assistance compared with 5,740 requests during the same month in 1972. This represents a 19% increase.

The table and graph reproduced below are for the period October 1, 1973 to October 31, 1973. The CPU time reported is in hundredths of a minute.

```
                     HSJS RESOURCE USAGE BY PROCESSOR FOR  1/10/73 TO 31/10/73

            |  TOTAL  |  TOTAL  |  TOTAL   |  TOTAL   ||  AVG   |  AVG  |  AVG  ||
            |  #JOBS  |   CPU   |  CARDS   |  LINES   ||CPU*10  | CARDS | LINES ||
---------------------------------------------------------------------------------
WATFIV   -W |   72054 |   52689 | 7004115  | 9420858  ||     7  |    97 |   130 ||
SPITBOL  -T |    2642 |    1386 |  224682  |  369612  ||     5  |    85 |   139 ||
PL/C     -C |  113969 |   88556 | 5682852  |16705087  ||     7  |    49 |   146 ||
UTILITY  -U |    4165 |     601 |  559350  |  801820  ||     1  |   134 |   192 ||
ALGOLW   -G |    2155 |    1783 |  321981  |  448948  ||     8  |   149 |   208 ||
PLUTO    -P |    2730 |     792 |  102321  |  230370  ||     2  |    37 |    84 ||
ASMG     -A |    3650 |    4040 |  351834  |  635684  ||    11  |    96 |   174 ||
WATBOL   -B |    1318 |    1945 |  471406  |  297601  ||    14  |   357 |   225 ||
SIMON    -S |    3180 |     358 |  110360  |  186535  ||     1  |    34 |    58 ||
ASSIST   -I |       0 |       0 |       0  |       0  ||     0  |     0 |     0 ||
LISP     -L |      51 |      58 |    2278  |    7275  ||    11  |    44 |   142 ||
OTHER    -? |       0 |       0 |       0  |       0  ||     0  |     0 |     0 ||
OTHER    -? |       0 |       0 |       0  |       0  ||     0  |     0 |     0 ||
---------------------------------------------------------------------------------
      TOTAL   205914    152208  14831179  29103790         7      72     141
```

```
ALL                        HSJS SUMMARY FOR  1/10/73 TO 31/10/73

PROCESSOR      #JOBS  % TOTAL |  #JOBS  TIME+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
WATFIV   -W    72054   (34%)  |   1115     0|WWWCCCC
SPITBOL  -T     2642   ( 1%)  |   1173      |WWWCCCCC
PL/C     -C   113969   (55%)  |   1081     1|WWCCCCC
UTILITY  -U     4165   ( 2%)  |    910      |WCCCCC
ALGOLW   -G     2155   ( 1%)  |    861     2|WCCCCB
PLUTO    -P     2730   ( 1%)  |    679      |WCCC
ASMG     -A     3650   ( 1%)  |    443     3|WCC
WATBOL   -B     1318   ( 0%)  |    325      |WCC
SIMON    -S     3180   ( 1%)  |    239     4|C
ASSIST   -I        0   ( 0%)  |    273      |C
LISP     -L       51   ( 0%)  |    142     5|C
OTHER    -?        0   ( 0%)  |     19      |
OTHER    -?        0   ( 0%)  |      9     6|
                              |      4      |
                              |      0     7|
                              |     49      |
                              |   1761     8|WWWWWCCCCCCC
                              |   4294      |WWWWWWWWWWWWCCCCCCCCCCCCCCCCCCUA
                              |   4519     9|WWWWWWWWWCCCCCCCCCCCCCCCCCCCCCCUP
                              |   6090      |WWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUPA
                              |   5843    10|WWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCUPA
                              |   7002      |WWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAAS
                              |   7704    11|WWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
                              |   8326      |WWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPASS
                              |   9279    12|WWWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUPAS
SHIFT    # JOBS   % TOTAL     |   9460      |WWWWWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
0 - 8      7322     ( 3)      |   9177    13|WWWWWWWWWWWWWWWWWWWWWWWWWWWCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUUGPASS
8 - 4    119679     (58)      |   9427      |WWWWWWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPASS
4 - 12    78913     (38)      |   9098    14|WWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
                              |   9188      |WWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
  148109 JOBS (71%) WERE RUN  |   9157    15|WWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUUGPAAS
     FROM 10 AM TO 7 PM       |   9354      |WWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
                              |   8405    16|WWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
                              |  10078      |WWWWWWWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUGPAS
                              |   7810    17|WWWWWWWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCUPAS
                              |   6844      |WWWWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCCCCCUPAS
                              |   6199    18|WWWWWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCCUGPS
                              |   5758      |WWWWWWWWWWWWWWCCCCCCCCCCCCCCCCCCCCCCCCUPAS
                              |   5918    19|WWWWWWWWWWWWWWWCCCCCCCCCCCCCCCCCCCCCCCCUGPS
                              |   5469      |WWWWWWWWWWWWWWCCCCCCCCCCCCCCCCCCCCCUGPAS
                              |   5484    20|WWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCUGAS
                              |   5450      |WWWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCUPA
                              |   5208    21|WWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCUPAS
                              |   5244      |WWWWWWWWWWWWTCCCCCCCCCCCCCCCCCCCCCCCUPAS
                              |    708    22|WWCC
                              |    171      |C
                              |     71    23|
                              |     96      |
                                            +----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                       TOTAL 205914         0         1350      2700      4050      5400      6750      8100      9450
```

CHRISTMAS HOURS AT ERINDALE

V. Lawrason

The Erindale Computer Centre will close at 5:00 p.m. on Friday, December 21, 1973 and reopen at 9:00 a.m. on Wednesday, January 2, 1974. The keypunch and typewriter terminal rooms will be open whenever the college buildings are open.

Users who do not have their own key and will be doing research or who will have specific computing needs during the holiday period may obtain special permission to use the facilities on their own through normal channels. For information concerning the hours of operation at the St. George site, refer to the article Christmas/New Years Operations Schedule appearing elsewhere in this issue of the Newsletter.

Users with questions concerning the holiday hours of operation at Erindale should contact Vaughan Lawrason in Room 2046 or at 828-5311.

ERINDALE/ST. GEORGE INTER-CAMPUS DELIVERY SERVICE

V. Lawrason

A regular delivery service has been established between the Erindale and Sandford Fleming Terminals. It is now possible for a user at Erindale to route lengthy printed (over 1500 lines) or punched (over 700 cards) output to the Sandford Fleming Terminal and receive it at Erindale within two hours, under ideal conditions.

Non-routine input or other items such as special forms may also be sent to the Sandford Fleming Terminal via this service. Similarly, output such as CalComp or special forms which are not available at Erindale can readily be returned to the Erindale user without his having to travel downtown.

Output is sent to Erindale twice daily at 10:15 a.m. and 3:15 p.m., arriving at Erindale at approximately 10:50 a.m. and 3:50 p.m. respectively. Items are sent to the Sandford Fleming Terminal from Erindale at 9:15 a.m. and 2:15 p.m., arriving at the Sandford Fleming Terminal at approximately 9:50 a.m. and 2:50 p.m. Generally, the routed output from a job submitted just after 9:00 a.m. or 2:00 p.m. will be available at the Erindale Terminal shortly after 11:00 a.m. or 4:00 p.m.

Persons at Erindale wishing to send special input or other items to the Sandford Fleming Terminal via this service should contact Vaughan Lawrason or Muriel Elles at the Erindale Terminal. At the Sandford Fleming Terminal, output and items to be sent to Erindale should be taken directly to the Sandford Fleming I/O Room (SF112) and given to the operator with instructions to file it in the Erindale box.

CHRISTMAS HOURS OF SERVICE AT SCARBOROUGH

R. Lombardi

The Scarborough Terminal will be closed Saturday, December 22, 1973 through Tuesday, January 1, 1974. Normal hours of service will resume Wednesday, January 2, 1974. During this holiday period, staff members may make arrangements to use the Scarborough facilities during the hours when the S/370-165 is operational. Please contact Beth Dunstall or Ralph Lombardi before Friday, December 21, if special hours are required.

The hours of operation for the period December 7 through December 21 have not yet been determined but will be posted in the terminal area as soon as they are available.

DECLINE AND FALL OF CRJE

I. Darwin

CRJE, the Conversational Remote Job Entry System was originally implemented as an interim replacement for CPS-RJE which was phased out when CPS was transferred to the S/360-65. Although a relatively reliable and stable system, CRJE gradually proved inadequate for the growing demands placed upon it and alternative systems were examined. On the basis of considerations such as user compatibility and cost effectiveness (given available and committed resources), TSO, IBM's Time Sharing Option, was chosen as the most viable replacement. TSO is largely integrated with the Operating System (O/S release 21.7) and is supported by IBM in future systems such as VS/2. An additional feature of TSO is that it allows the interactive use of almost any processor or program available to General Purpose Job Stream users. In July 1973, UTCC implemented a limited Remote Job Entry version of TSO and, almost immediately, the new system began competing with CRJE for usage.

The development of TSO is continuing (refer to the article TSO Timesharing appearing in this issue of the Newsletter). Projected improvements include several new commands and an improved OS/HASP interface. Current plans call for removal of CRJE from the system shortly after the New Year. If CRJE is not removed from the system in early January, a connect time charge for CRJE will be implemented. This move will be necessitated for equity with TSO and Background (batch) jobs which are charged on the basis of use. A CRJE facility on the S/370-165 in 1974 would attract fewer users, but would still require heavy system resource commitment. Thus the connect time charge would have to reflect the system resources used. Any CRJE user who requires assistance in converting to TSO should contact Ian Darwin at 928-7318, Room 116, Sandford Fleming Building, 10 King's College Road, Toronto, M5S 1A1.

Trends

Statistics compiled over the last few months indicate a growing trend away from the use of CRJE and, simultaneously, an increasing use of TSO. The figures are summarized in the graphs below.

CRJE to TSO-Connect Time Graph

The first graph indicates the weekly average connect time for CRJE (C) and TSO (T). From the graph it can be seen that the use of CRJE is declining fairly steadily and that currently TSO is being used almost as much as CRJE.

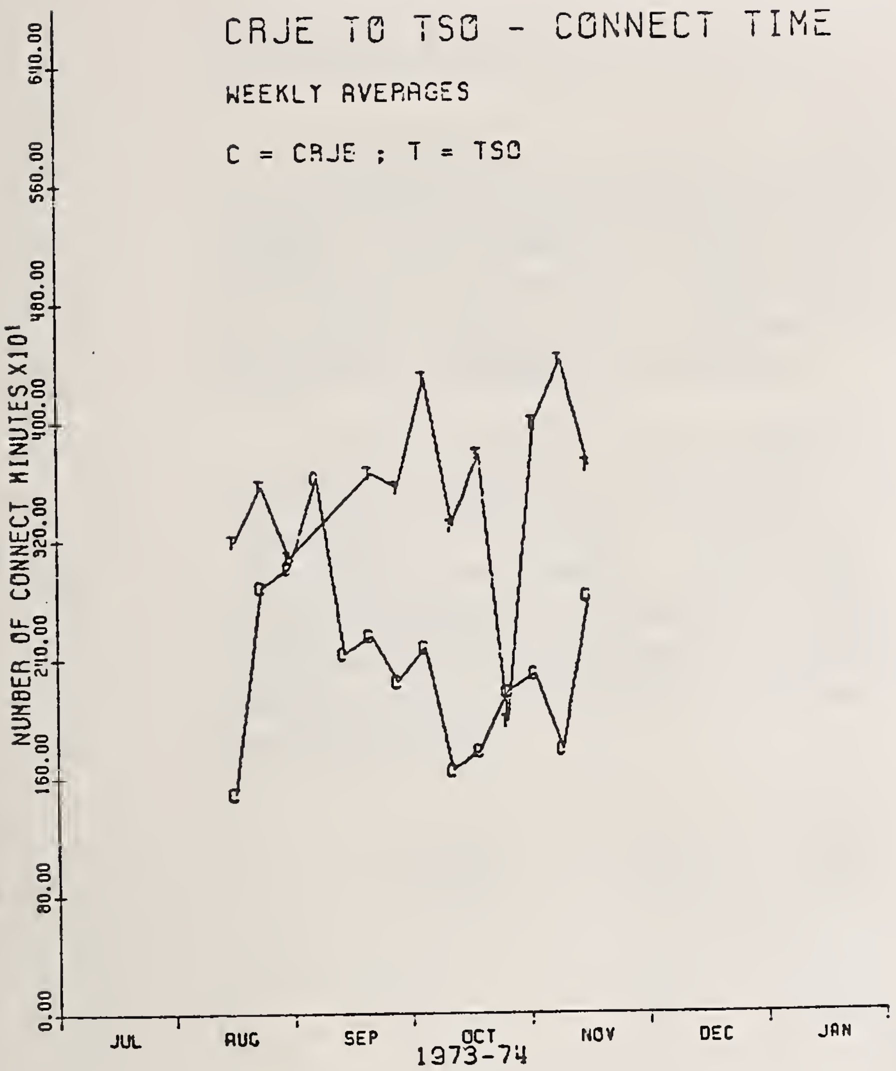
CRJE to TSO-Users Graph

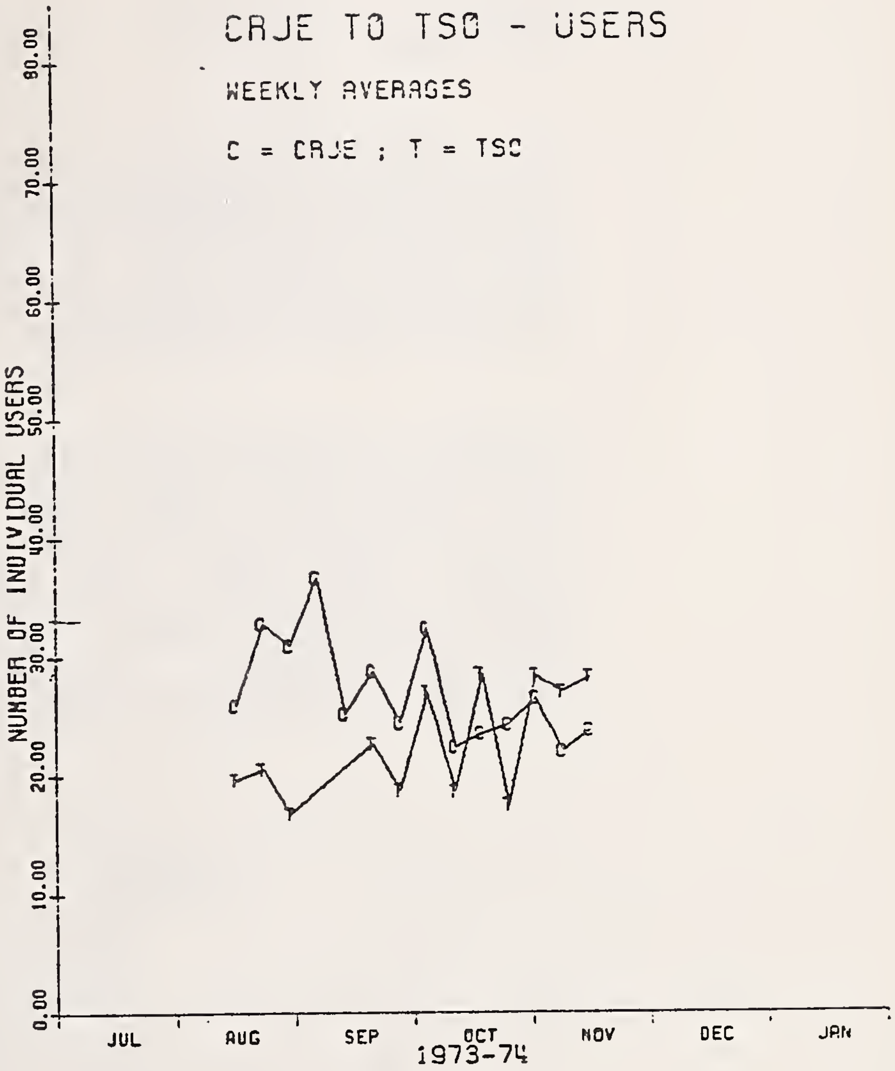
The second graph shows the average number of users per day for CRJE (C) and TSO (T). The raw data indicates that there is a 'hard core' of approximately 10 steady users on each system in addition to a number of intermittent users. This accounts for the fairly steady usage.

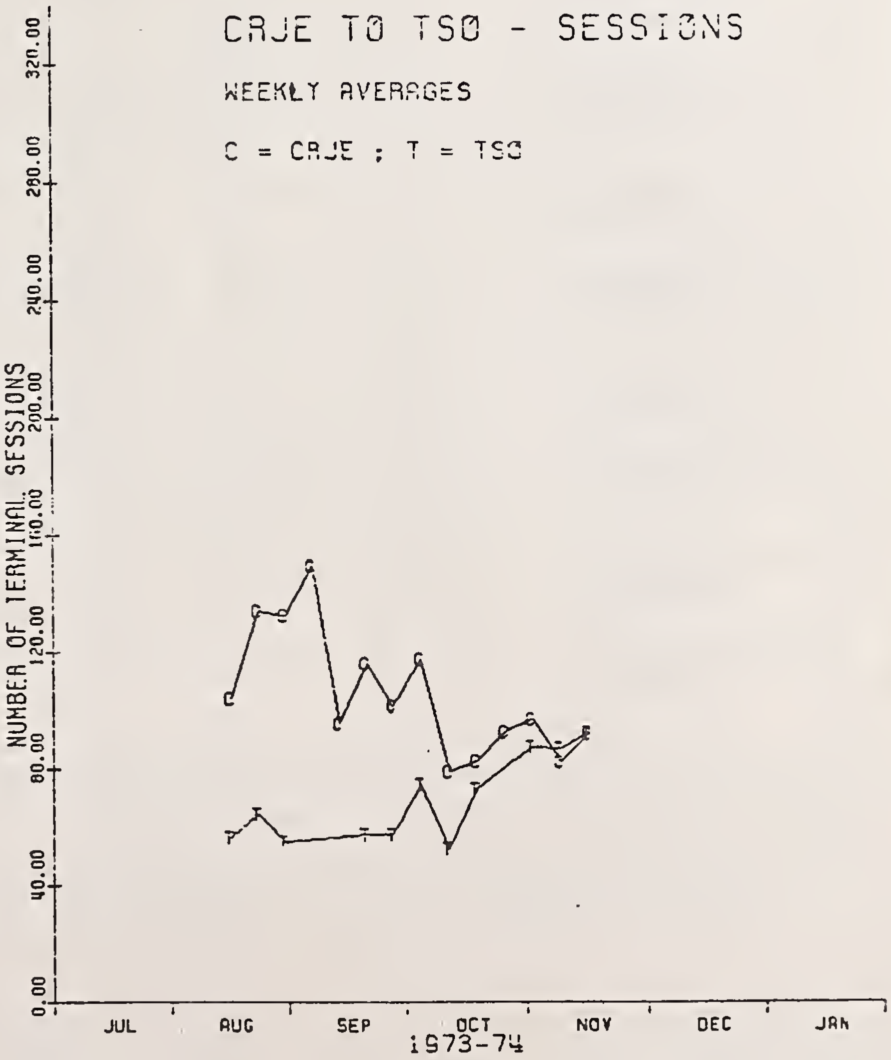
CRJE to TSO-Sessions Graph

The third graph indicates the average number of times that each system is accessed via the LOGON command. Note that there are more 'sessions' than 'users'. This can be explained by the fact that a single user may log on to both systems, or onto one system several times during a single day.

In summary, the decreasing use of CRJE and the corresponding increasing trend towards use of TSO are apparent in all three graphs. We feel that TSO is the right choice . Users are encouraged to contact us with any TSO related suggestions, criticisms or problems.


CRJE TO TSO - CONNECT TIME
WEEKLY AVERAGES
C = CRJE ; T = TSO
NUMBER OF CONNECT MINUTES X10¹
0.00
80.00
160.00
240.00
320.00
400.00
480.00
560.00
640.00
JUL
AUG
SEP
OCT
NOV
DEC
JAN
1973-74
C
T


CRJE TO TSO - USERS
WEEKLY AVERAGES
C = CRJE ; T = TSO
NUMBER OF INDIVIDUAL USERS
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
JUL
AUG
SEP
OCT
NOV
DEC
JAN
1973-74
C
T


CRJE TO TSO - SESSIONS
WEEKLY AVERAGES
C = CRJE ; T = TSO
NUMBER OF TERMINAL SESSIONS
0.00
40.00
80.00
120.00
160.00
200.00
240.00
280.00
320.00
JUL
AUG
SEP
OCT
NOV
DEC
JAN
1973-74
C
T

INTERACTIVE SYSTEMS RELIABILITY

K. Jain

The uptimes for the month of October for each of APL, ATS, and CPS were 98.63%, 98.57% and 98.54% respectively. The total number of scheduled hours of operation during the month of October were 486. In addition to the scheduled time, APL, ATS and CPS were also available for approximately 135 hours of unattended weekend operation.

The following table summarizes the time lost out of scheduled hours of operation. There was one late start on October 1, resulting in total delay of 20, 24 and 25 minutes for APL, ATS and CPS respectively. The table shows the time lost due to system failures for each of the systems: eight unscheduled IPL's were required as a result of the failures. Problems with the temperature controller in Processor Storage accounted for most of the down time.

DATE	DOWNTIME (mins)			REASON
	APL	ATS	CPS	
Tue. Oct. 2	10	15	13	*Core Image Incomplete (SOFTWARE)
Wed. Oct. 3	16	18	19	*Disk I/O Error (HARDWARE)
Mon. Oct. 22	21	24	27	*Storage Check (HARDWARE)
Tue. Oct. 23	14	15	16	*Storage Check (HARDWARE)
Tue. Oct. 23	18	19	20	*Storage Check (HARDWARE)
Tue. Oct. 23	95	96	97	*Storage Check (HARDWARE)
Tue. Oct. 23	136	137	138	*Storage Check (HARDWARE)
Wed. Oct. 24	89	91	93	*Storage Check (HARDWARE)
Total	399	415	423	*IPL Required

System Failures October 1 to October 31, 1973

ATS/RJE NOW AVAILABLE

S. Goldfarb

A Remote Job Entry Subsystem added to ATS by the Interactive Systems Group provides a means for transmitting a copy of an ATS document to HASP to be scheduled for execution as a batch OS job on the S/370 computer. Once transmitted to HASP, the status of the job may be determined through job enquiry commands from ATS. Output from a job may be directed to ATS and examined at the terminal; the output may subsequently be transmitted to a high speed device for printing or punching. All ATS editing and merging operations are available for entering and correcting the job's "card images". Job output directed to ATS may be retrieved as individual data sets (each identified through its corresponding JCL DDNAME). Output may also be retransmitted to a high speed device by individual data set. (Re-)routing of output to remote high speed terminals is made possible through HASP control cards and ATS command options. Since ATS employs an overlay mechanism for invoking various processes, the ATS/RJE extensions increase the ATS core requirements by less than 4K. Safeguards have also been implemented to inhibit execution of unauthorized jobs on the S/360 computer. The ATS/RJE facility has been in (restricted) use by the Interactive Systems Group since July 1972. USERBOOK section 4.3300 provides detailed instructions on the use of ATS/RJE.

The ATS/RJE facility was written in conjunction with a UTCC-extended version of the Triangle Universities Computation Center HASP to HASP system. The TUCC modifications to HASP provide the mechanism for transmitting job's between the two CPUs (S/360 and S/370) over a high speed communications link; the Interactive Systems Group's modifications involve extensions and generalizations of existing features of HASP to HASP. The concept of HASP internal devices was expanded to provide a general interface between an external program (e.g. ATS) and HASP. An internal reader is used for submitting jobs to HASP, an internal printer for transmission of job output from HASP to the external program, input and output internal consoles for handling "operator" commands and replies between the external program and HASP, and an internal retriever for placing output directly into the HASP output queue. (The internal devices are grouped to form an internal remote.) In addition, user identification can be associated with each job to allow the external program (e.g. ATS) to separate jobs and console messages by terminal user. The routing concepts were also expanded to allow routing between more than two CPUs. Besides being used by ATS/RJE for transmitting OS jobs to the S/370 and retrieving job output, the HASP to HASP communications facility will allow the Interactive Systems Group to (soon) provide a means for optional routing of any ATS high speed printer output or APL Fileprint output to S/370 local or remote printers and also an improved procedure for the transfer and conversion of APL PLUS to OS or OS to APL PLUS files.

DEPARTING....J. R. MCBRIDE

T. A. Holland

It is with regret that CRF announces the resignation of our manager, J.R.McBride, effective November 30, 1973.

As you will know from Dr. Wilson's "farewell" to Jim, he is going to the Minicomputer Division of Bell Northern Research

Jim joined the University of Toronto in March 1967 and helped bring about CRF's creation in July 1969 and has been the driving force behind its growth during these past four years. Jim was also responsible for the creation and running of the Engineering Undergraduate Terminal and the Arts and Science Undergraduate Terminal. He managed these two terminals parallel with CRF and later arranged their merger with UTCC. He began the CRF/UTCC merger proceedings in December 1971 and just recently helped bring about its successful completion. The merger will likely bring about more emphasis on the use of small computers and the provision of specialized hardware.

All the staff at CRF are truly sorry to see Jim go and will miss his good-nature and pleasant personality. We wish him every success in his new field.

CRF USERS' MEETING

T. A. Holland

The October CRF Users' Meeting was held at 3:00 p.m. on Friday, October 26, 1973 in Room SF222, Sandford Fleming Laboratories by T.C. Stevens. A variety of subjects were discussed. The November Users' Meeting was held on Friday, November 23, 1973 in Room SF222, Sandford Fleming Laboratories.

Please note the December meeting will be held Friday, December 21, 1973 in Room SF222, Sandford Fleming Laboratories.

LOCK CHANGED

The lock on CRF's lab door has been changed. CRF's Grade A Operators please pick up your new key in Room SF214,Sandford Fleming Laboratories. (Miss J. King)

SMALL COMPUTER SEMINARS

M. Hindley-Smith

On Tuesday, October 30, Ted Edwards of Micro Computer Machines Inc. discussed and demonstrated the MCM/70, a portable, self-contained, general purpose computer offering the APL language. The presentation created a great deal of interest among the standing-room-only audience of 140.

UTCC DIRECTORY

	ROOM	PHONE 928-
DIRECTOR		
John C. Wilson	49 St.Geo	6496
ASSOCIATE DIRECTOR		
Al Heyworth	49 St. Geo	4936
ASSOCIATE DIRECTOR		
Dave McNaughton	SF143	6281
USER LIAISON OFFICER		
Bill Greene	SF128A	2694
Information Office	SF128	4990 or 4991
AUTHORIZATION CLERKS		
Nancy Pocock (S/370 + 7094)	SF139	8702
Ann DeFazio (S/370 - 7094)	SF139	8702
Yvonne Bowen (Interactive)	49 St.Geo	8703
S/370 SERVICES		
MANAGER		
Dave McNaughton	SF136	6281
SERVICES SUPERVISOR		
Stan Yagi	SF113	7331
OPERATIONS SUPERVISOR		
Derry Cox	SF113	7092
OPERATIONS SUPPORT SUPERVISOR		
Bob Cavanagh	SF114	4967
SYSTEM SOFTWARE SUPERVISOR		
Rein Mikkor	SF113	5058
PROGRAM ADVISORS	SF117	8599
INTERACTIVE TERMINAL SYSTEMS		
MANAGER		
Sam Goldfarb	49 St.Geo	3787
7094 SERVICES		
MANAGER		
Joyce Walton	BT1207	7094
COMPUTER RESEARCH FACILITY		
MANAGER		
J. R. McBride	SF214	4086

JOB STATUS QUERIES:

SYSTEM/370	7373
7094	7094

INTERACTIVE TERMINAL SYSTEMS:

System Status	6234
APL	7200
ATS	7100
CPS	6200

CONVERSATIONAL REMOTE JOB ENTRY (CRJE)

2741: Tel: 7223 7381 7386
TTY: 7445

TSO

TTY	7370
2471	7303

UTCC COMPUTER EQUIPMENT

(a) SYSTEM/370 MODEL 165

- located in SF103/105/112
- provides General Purpose Job Stream, High Speed Job Stream, TSO and Conversational Remote Job Entry services
- 3072K bytes of memory
- 1 drum
- 10 disk drives IBM (3330)
- 8 disk drives IBM (2314)
- 6 magnetic tape drives
- (4 9-track and 2 7-track)
- 6 display consoles
- 6 printers
- 5 card readers
- 1 card punch
- 7 remote batch terminals
- 1 paper tape reader
- CALCOMP plotter (11" and 30")
- Gould plotter (11")
- OS/MVT with HASP

(b) SYSTEM/360 MODEL 65

- located in McLennan Physical Laboratories
- provides Interactive Systems Service
- 1536K bytes of core
- 16 disk drives (2314)
- 2 9-track magnetic tape drives
- 1 printer
- 1 card reader
- 1 card punch
- 140 typewriter terminals

- OS/MVT with APL, ATS, and CPS

(c) 7094 II

- located in Room 1203 Burton Tower
- 32K words of core
- 1 disk
- 8 magnetic tape drives
- input/output via a 1401 computer

(d) IBM/360 MODEL 44

- located in SF207
- 256K core
- 10 disk drives (8 2314's and 2 2311's)
- 2 2401 tape drives
- 2 1403 printers
- 2 2501 card readers
- 2701 data adapter
- 2250 video display unit
- RADDTS
- Calcomp microfilm plotter
- minicomputers
- VW01 Digitizing Tablet

UNIVERSITY OF TORONTO
COMPUTER CENTRE

MISS S.SIM
ROOM 202
49 ST. GEORGE ST.
UNIV. OF TORONTO